

Composite Structure Monitoring using Direct Write Sensors, Phase II

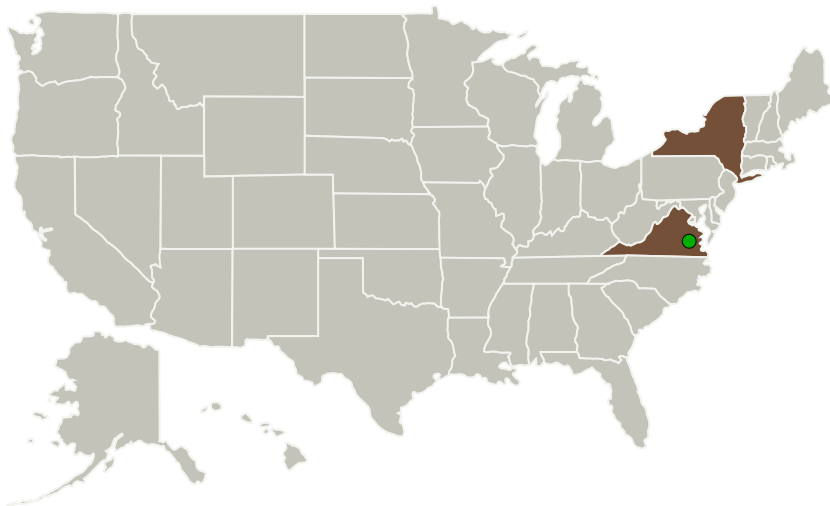
Completed Technology Project (2011 - 2013)



Project Introduction

This NASA SBIR Phase II project seeks to develop and demonstrate a suite of sensor products to monitor the health of composite structures. Sensors will be made using the Company's Direct Write process based on Mesoplasma's deposition technology. This allows a wide variety of sensor materials and architectures to be deposited onto conformal components made from polymer composite, metallic, and ceramic materials. Sensors include strain gages, thermocouples, piezoelectric devices, damage detection systems along with shielded conductors and passive circuit components. Improving the compatibility of the Direct Write Process with advanced composites is essential for transitioning the technologies to NASA platforms. A principal objective is to demonstrate operability of Direct Write sensors under environmental conditions that may be expected on a NASA mission for which composite monitoring is necessary. Instrumented structures will be exposed to cryogenic and high temperature environments as well as requisite mechanical loading as anticipated in operation. Sensors will demonstrate their diagnostic capability and compatibility with existing data acquisition and health management infrastructure for NASA applications of interest. Furthermore, reducing cumbersome leadwire bundles through integrated wiring or passive wireless sensing approaches will make Direct Write technology an even more suitable solution for integrated health and condition monitoring.

Primary U.S. Work Locations and Key Partners



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Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

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Organizations Performing Work	Role	Type	Location
MesoScribe Technologies, Inc.	Lead Organization	Industry	Setauket, New York
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
New York	Virginia

Project Transitions

**June 2011:** Project Start**November 2013:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/138768>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

MesoScribe Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

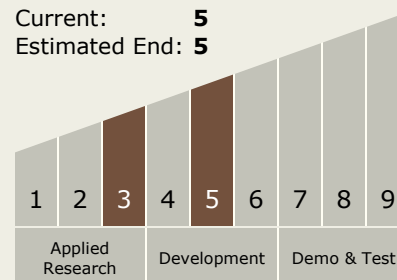
Carlos Torrez

Principal Investigator:

William C Smith

Technology Maturity (TRL)

Start: 3
 Current: 5
 Estimated End: 5



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Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.2 Observatories
 - └ TX08.2.2 Structures and Antennas

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System